

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

ORDER NO. 94-026  
RESCINDING ORDER NO. 87-9

FINAL SITE CLEANUP REQUIREMENTS FOR:

**BOURNS, INC.  
PRECISION MONOLITHICS, INC.**

for the property located at  
**1500 SPACE PARK DRIVE  
SANTA CLARA, SANTA CLARA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. **Site Location and Description** Bourns, Inc. (the discharger) and Precision Monolithics, Inc. (the discharger), have been involved with the facility located at 1500 Space Park Drive, Santa Clara, California. The facility is located in the north-central portion of the City of Santa Clara, and is approximately 1200 feet south of Highway 101 and 1.3 miles west of the Guadalupe River.

The site consists of a three-building complex, covers approximately 5.5 acres and is located in a zoned light industrial/commercial area. The closest residential area is a mobile trailer park located north of Highway 101.

2. **Site Ownership and History** The primary land use in the study area has historically been agricultural. In 1969, the site was acquired and occupied by Precision Monolithics, Inc. (PMI), a wholly-owned subsidiary of Bourns, Inc. (Bourns). PMI owned and operated this integrated circuits manufacturing facility until 1990. On August 8, 1990, Bourns sold the PMI company to Analog Devices, Inc. (Analog), but retained ownership of the property at 1500 Space Park Drive. To confirm its responsibility, Bourns contractually agreed with Analog to accept responsibility for cleanup of the soil and groundwater contamination resulting from releases at the site, and has done so since the sale of PMI. In November 1990, the PMI company was incorporated into Analog Devices, Inc.

Subsurface investigations initiated in January 1983 revealed the presence of various industrial chemicals in soil and groundwater at the facility. These chemicals included trichloroethylene (TCE), tetrachloroethylene (PCE), cis- and trans-1,2-dichloroethylene (DCE), 1,1-DCE, 1,1,1-trichloroethane (TCA), 1,1-dichloroethane (DCA), 1,2-dichlorobenzene (DCB), 1,2,4-trichlorobenzene (TCB), and vinyl chloride. These chemicals are associated with the type of manufacturing operations, as well as the type of chemical storage and handling conducted at the facility.

Based upon chemical usage data and soil and groundwater investigations, PMI was responsible for the release of chemicals to soil and groundwater at 1500 Space Park Drive. Representatives of Bourns have agreed to be responsible for costs of investigation and cleanup of contamination caused by PMI.

Bourns, Inc. is named as discharger based on its past ownership of PMI, its current ownership of the property, as well as its agreement with Analog. PMI is named as discharger because it is responsible for the release at the site. Although it is the successor company to PMI, Analog is not named as discharger at this time. However, the Board reserves the right to name Analog or other additional dischargers if Bourns fails to comply with the requirements of this Order, if Analog unreasonably restricts access to the property, or other circumstances occur that, in the Board's discretion, would warrant naming Analog or other additional parties as a discharger. In this context, the Board will consider adding successors or assigns of Bourns, Inc., or any subsequent landowner(s) to this Order.

If additional information is submitted indicating that any other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the State, the Board will consider adding that party's name to this Order.

3. **Board Orders and Permits** The Board has adopted the following orders and permits for the Bourns facility:

- Waste Discharge Requirements, Order No. 85-109, adopted September 18, 1985 and rescinded by Order No. 87-9 (below)
- Site Cleanup Requirements, Order No. 87-9, adopted February 18, 1987
- Waste Discharge Requirements, Order No. 85-119 (NPDES Permit No. CA0028878), adopted October 16, 1985; amended by - Order No. 87-137, adopted October 21, 1987

4. **History of Site Investigations**

**Contaminant Source Investigation** The potential sources investigated at the Bourns site involved two acid neutralization sumps and associated piping, and two underground waste solvent storage tanks. In January 1983, subsurface investigations were undertaken, and by mid 1985 one sump and both tanks had been removed.

The first below-ground acid neutralization system (ANS) was built on the south side of Building 1 (Figure 1) in 1969 and was used for neutralizing process wastewaters before they were discharged to the sanitary sewer. In 1975, the sump was taken out of service and replaced by a second sump located approximately 40 feet south of the

first. The first sump was removed in August 1985 and the second sump is currently in operation. There are incomplete records of the total volume of soil excavated or the depth to groundwater at the time of the former ANS removal, but it was reported that the sand backfill surrounding the sump and two feet of soil beneath the fill were removed to a total depth of 8.5 feet below ground surface (bgs).

In 1975 an underground 600-gallon waste solvent storage tank, called the FAB I tank, was installed south of Building 1. A second, 1,000-gallon FAB II tank, also used for waste solvent storage, was installed 100 feet to the east in 1977 when Building 2 was constructed. When the FAB I and II tanks were removed in January 1985, the groundwater elevation was 7 feet bgs. Approximately two feet (or 180 cubic yards) of soil from beneath the tanks was removed, such that the total depth of the excavations was 10 feet bgs.

**Interim Remedial Actions** To prevent further migration of contaminants in the groundwater, the discharger initiated onsite interim remedial actions, and in November 1987 expanded the interim remedial actions to the offsite area. The remedial activity which is currently operating involves extraction of groundwater from the A1 and A2 aquifer zones from four onsite and two offsite extraction wells, followed by treatment of the water by air stripping, and discharge to a storm sewer tributary to Guadalupe River. Generally, this extraction and treatment system has been an effective interim remedial measure for containing and cleaning up the plume. As of October 1992, 83 kilograms (approximately 183 pounds) of total volatile organic compounds (VOCs) had been removed at the PMI/Bourns site.

**Site Hydrogeology** The site stratigraphy has been investigated to a depth of approximately 75 feet. Two shallow water-bearing zones, designated as A and B aquifer zones, are both located beneath an upper clay layer which ranges from 10 to 15 feet bgs. The A aquifer is encountered from approximately 15 to 45 feet bgs, and the B aquifer extends from depths of approximately 45 or 50 feet bgs, at various locations throughout the site, to at least 75 feet. The deeper, confined aquifer (the regional aquifer) is reported to occur in the site vicinity at depths greater than 200 feet bgs and is separated from shallow water-yielding sediment zones by an approximately 80 to 200 foot thick regional aquitard.

The A aquifer has been subdivided into two A zone saturated sediments; the A1 zone extends from approximately 15 to 25 feet bgs, and the A2 zone from approximately 25 to 45 feet bgs. It has been shown that while these two zones are in hydraulic communication, the content of fine-grained sediments is generally higher in the A1 sediments than in the deeper A2 sediments. This has resulted in lower transmissivity values in the A1 zone than in the A2.

Early investigations indicated possibly two buried stream channels in the A zones, one running through the site and northwards towards Highway 101, and a second intersecting the first just south of Highway 101. Recent additional lithologic investigations performed by the discharger at the request of Regional Board staff indicated that there were no preferential pathways as initially hypothesized.

Groundwater elevation data measured since monitoring began indicate that the hydraulic gradient in the A aquifer zones is to the north under current extraction conditions and to the northeast under conditions of no extraction. Water table data indicate that the A aquifer occurs under confined conditions, and vertical gradients between the A1 and A2 zones are relatively low and variable in direction. The B aquifer horizontal gradient is oriented toward the northeast, and is hydraulically separate from the A aquifer. An upward vertical gradient appears to exist in the B aquifer.

Groundwater elevations measured in the third quarter 1993 indicated that the current onsite depth to water is approximately 10 feet bgs. Historical groundwater elevations in wells near Building 1 have indicated fluctuations ranging from 10 to 18.5 feet bgs since 1986.

The upper aquifer is not being used as a drinking water source. A survey of abandoned, inactive, and active wells in the area as potential conduits was performed in 1987. Only one well, which was sealed by Santa Clara Valley Water District in November 1985, was located in the vicinity of the PMI/Bourns plume. All of the remaining abandoned, inactive, or destroyed wells were located north of Highway 101 and outside the chemical plume. All of the active municipal, industrial, and domestic wells are also located beyond the plume, approximately 4,000 to 6,000 feet downgradient of the PMI/Bourns site. The three active supply wells closest to the PMI/Bourns site are screened in the deeper regional aquifer.

**Soils** Initial investigations at the PMI/Bourns facility were conducted in January 1983, prompted by the Regional Board's 1982 survey of underground storage tank usage. Results of early investigations indicated the areas of highest soil contamination, consisting primarily of chlorinated solvents, were in the vicinity of the ANS and FAB I tank. Confirmatory samples taken after the ANS and FAB I tank were removed indicated that up to 68 ppm of TCE and 80 ppm 1,2-DCE, as well as lower concentrations of DCB, TCB, and stoddard solvent, remained in the excavations.

Additional chlorinated solvent contamination up to 7 ppm total VOCs was identified between 10 and 16 feet bgs in saturated soils from boreholes beneath and directly south of Building 1. Soils sampled from three onsite monitoring wells which were installed south of Building 1 in August 1990 revealed the presence of up to 20 ppm DCBs, up to 23 ppm TCBs, and 1200 ppm stoddard solvent. Again, contaminated soils were identified at depths between 10 and 14.5 feet bgs. Figure 2 indicates the

lateral extent of contaminated soils remaining at the site; the vertical extent is generally at depths between 9 to 16 feet bgs, below the current water table.

**Groundwater** Currently there are 59 onsite and offsite groundwater monitoring wells installed in the A1 and A2 aquifer zones, and four wells installed in the B aquifer. Initially, 11 extraction wells were installed, but only two onsite wells and two offsite wells were consistently utilized as part of the extraction system. At the request of the Regional Board staff, in July and August 1993 two additional onsite wells were started up to improve capture.

The PMI/Bourns plume extends laterally in the A aquifer approximately 1000 feet beyond the property boundary north as far as Highway 101, but apparently does not continue beyond the highway. Chemical analysis performed in July 1993 on grab groundwater samples from the A aquifer and just north of Highway 101 did not detect any contaminants. In terms of the vertical extent of the plume, it appears that the B aquifer has not been impacted by the PMI/Bourns site. Only one occurrence of cis-1,2-DCE at 10 ppb was ever detected in any of the four monitoring wells in the B aquifer.

The PMI/Bourns plume has been characterized in terms of onsite and offsite contamination within the A aquifer. The predominant chemicals in the onsite plume are TCE and cis-1,2-DCE at up to 400 ppb and 920 ppb, respectively, and up to 340 ppb TCE and 680 ppb cis-1,2-DCE in the offsite plume. The location of highest contamination in the offsite plume is centered approximately 700 feet north of the PMI/Bourns property boundary near Kenneth Street. Other chemicals present at lower concentrations include trans-1,2-DCE, 1,1-DCE, 1,1,1-TCA, 1,1-DCA, Freon 113, DCB, and vinyl chloride.

The plume width extends approximately 600 feet east to west, and appears to be well-defined enough to institute final remediation at the site. Other than the westernmost PMI/Bourns wells, the lateral extent of the offsite western plume boundary is also delineated by monitoring wells LSIK-1 and LSIK-2, located at 3150 Kenneth Street and owned by LSI Logic Corporation (LSI). These wells will be incorporated into the PMI/Bourns groundwater monitoring program to verify adequate capture of the groundwater extraction system.

## 5. Adjacent Sites and Parcels

**LSI Logic Corporation:** LSI currently owns two parcels in the block between Alfred and Kenneth Streets, where boundaries of the Fairchild/Micro Power (described below) and the PMI/Bourns plumes are located. LSI leased the property at 3105 Alfred Street from Fairchild in 1983, and currently maintains office space and a semi-conductor research and design facility at this address. In 1983, Fairchild removed an underground waste solvent tank at this location and installed five groundwater monitoring wells. Since 1983, data from these wells have indicated generally non-

detectable VOC concentrations, except at LSI-3, central to the property, at less than 10 ppb total VOCs, and one recent detection of trans-1,2-DCE (35 ppb) in well LSI-4 at the southeast corner.

The adjacent property to the east, located at 3150 Kenneth and previously occupied by a packaging company, was purchased by LSI in May 1986. Information on chemical usage at the packaging company is limited to a reported observation of glue and adhesive containers onsite. The building was consumed by fire (date unknown) and demolished in 1985. In April 1986, LSI Logic installed two monitoring wells, LSIK-1 and LSIK-2, to obtain baseline groundwater data. When total VOCs, including TCE, trans-1,2-DCE, 1,1-DCE, 1,1-DCA, and vinyl chloride were detected at up to 1,000 ppb, Regional Board staff requested LSI implement coordinated groundwater monitoring in conjunction with Fairchild/Micro Power and PMI. However, there was no known source attributed to chemicals detected at this property. Although the site has remained vacant and LSI has never occupied the property, LSI has provided quarterly sample results since August 1987. Concentrations have decreased over time; current groundwater data indicates total VOC concentrations up to 130 ppb.

**Fairchild/Micro Power - Alfred Street Facility:** This site is located at 3080/3100 Alfred Street, one block west of the PMI/Bourns offsite plume. Subsurface investigations initiated in 1982 revealed the presence of TCE, 1,1,1-TCA, and their breakdown products, cis-1,2-DCE, 1,1-DCE, and 1,1-DCA. In 1988, groundwater extraction and treatment were implemented which requires coordinated pumping with PMI/Bourns to prevent commingling of contaminants. The Fairchild/Micro Power eastern plume boundary is partly defined by low to non-detectable concentrations of VOCs in the five wells located at 3105 Alfred Street. The Board adopted Final Site Cleanup Requirements for Fairchild/Micro Power in July 1992.

The chemicals detected in the two LSIK wells at 3150 Kenneth Street have been associated with both Fairchild/Micro Power and PMI/Bourns sites, however, the chemical concentrations in the five LSI wells have never been comparable, nor shown a gradient linking them to the LSIK cluster. Based on site history and groundwater data, the LSIK wells appear to represent the boundary of the PMI/Bourns plume.

## 6. State Water Resources Control Board Resolutions

**State Board Resolution 68-16** On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California." This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. This is based on a Legislative finding, contained in Section 13000, California Water Code, which states

in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable." The original discharge of wastes to the groundwater at this site was in violation of this policy.

**State Board Resolution 88-63** On May 19, 1988, the State Board adopted Resolution 88-63, "Sources of Drinking Water." This resolution states that all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply. For purposes of establishing cleanup objectives, the shallow groundwater at the site is designated a potential source of drinking water, and protective levels shall be those levels which have been established as protective for drinking water.

7. **Regional Water Quality Control Board Resolutions**

**Regional Board Resolution 88-160** Resolution 88-160 strongly encourages the maximum feasible reuse of extracted water from groundwater pollution remediations either by the discharger or other public or private water users.

**Regional Board Resolution 89-39** Resolution 89-39, "Incorporation of 'Sources of Drinking Water' Policy into the Water Quality Control Plan" on March 15, 1989. This policy defines groundwater as suitable or potentially suitable for municipal or domestic supply if it: 1) has a total dissolved solids content of less than 3,000 mg/l, and 2) is capable of providing sufficient water to supply a single well with at least 200 gallons a day. For purposes of establishing cleanup objectives, the shallow groundwater zone(s) at this site qualify as potential sources of drinking water.

8. **Water Quality Control Plan** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986, and the State Board approved it on May 21, 1987. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and ground waters.

The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

- a. Industrial process water supply
- b. Industrial service water supply
- c. Municipal and Domestic water supply
- d. Agricultural water supply

The Board amended the Basin Plan on September 16, 1992 to implement two statewide plans and again on October 21, 1992 to formalize groundwater protection and management policies, which is pending State Water Board's approval. The latter amendment describes how groundwater cleanup standards should be established. The

primary objective is to maintain background, but standards should be set no higher than Maximum Contaminant Levels (MCLs), and may be set lower based on a site-specific risk assessment. The Board will consider several factors when setting cleanup standards: cost and effectiveness of cleanup alternatives, time to achieve cleanup standards, and pollutants' toxicity, mobility, and volume.

9. **Summary of Site Risk** To develop final remedial actions for the site which would be protective, in 1989 a Baseline Public Health Evaluation (BPHE) was prepared by the discharger, and in 1992 was updated to include an abbreviated health risk analysis for use of A-zone groundwater as a potable water source. The abbreviated risk analysis included additional indicator chemicals and current drinking water standards. The BPHE utilized US EPA guidance provided by the *Superfund Public Health Evaluation Manual* (1986), while the abbreviated risk analysis was a modified version of US EPA guidance documents *Human Health Evaluation Manual - Part A, Risk Assessment Guidance Under Superfund* (1989) and *Human Health Evaluation Manual -Part B, Development of Risk-Based Remediation Goals* (1991).

The abbreviated risk analysis quantitatively evaluates the potential risks to human health that are associated with the A-zone groundwater as a possible potable water source in the vicinity of the PMI/Bourns site after cleanup, under a future residential land-use scenario. The steps the discharger used in the abbreviated health risk analysis involved determining the primary chemicals of interest and their toxicity. Calculations were then performed to determine residual risks after cleanup to drinking water standards for carcinogenic and non-carcinogenic chemicals in the groundwater, compared to the US EPA acceptable risk range and Hazard Indices. These chemicals included VOCs currently detected, as well as potential degradation products.

**Toxicity Classification for Chemicals of Interest** Ten primary compounds have been detected in the site groundwater. These compounds, classified as indicator chemicals, are: 1,2-DCB, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, 1,1,1-TCA, 1,2,4-TCB, PCE, and vinyl chloride. Of these ten compounds, TCE and cis-1,2-DCE are found at the highest concentration and the widest extent.

Four of the indicator chemicals are classified as carcinogens, five are non-carcinogens, and one, 1,1-DCA, has not been classified. The EPA categories for carcinogenic classification applied to the indicator chemicals are: vinyl chloride - an A category carcinogen (human carcinogen), TCE and PCE - B2 category carcinogens (probable human carcinogen, with inadequate human evidence and sufficient evidence from animal experiments), and 1,1-DCE - a C category carcinogen (possible human carcinogen, limited evidence of carcinogenicity in animals with inadequate human data). Five other chemicals, 1,2-DCB, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, and 1,2,4-TCB are non-carcinogens.



**Exposure Assessment** Under current use of the site, there appear to be no complete exposure pathways. Although the level of contaminants in the A zone aquifer are greater than drinking water standards, the shallow aquifer is currently not being used for drinking water. The deeper aquifer used for drinking water has not been impacted by site activities.

If changes in site conditions should occur in the future, the shallow groundwater could be utilized for domestic purposes. There is a potential for exposure to organic chemicals from the ingestion of contaminated groundwater or inhalation during showering if wells were screened in the A aquifer. To evaluate the risks from this type of potential exposure after chemicals are removed to MCLs, Chronic Daily Intakes were derived using US EPA standard exposure factors. The ingestion exposure route assumes drinking two liters of water per day by a 70-kilogram person (US EPA, 1988). US EPA (1989) estimates the dose of a VOC received during showering is equivalent to the dose received from direct ingestion. Therefore, the VOC chemical dose associated with ingestion was also used to calculate the risk related to VOC inhalation while showering.

**Risk Characterization** The estimated exposure point concentrations were then used to estimate the potential chemical intake from ingestion of groundwater from the A zone for a future-use residential scenario; the lifetime hypothetical cancer risk estimate was determined to be  $2 \times 10^{-5}$ , or two excess cancer cases in a population of 100,000. EPA's acceptable risk level for carcinogens ranges from  $10^{-4}$  to  $10^{-6}$ , or one in 10,000 to one in 1,000,000 excess cancers in an exposed population.

Using the same exposure scenario, the non-carcinogenic Hazard Index for VOCs from use of shallow groundwater was equal to 0.8. EPA's acceptable Hazard Index for a site must be less than or equal to 1.0.

Based on the abbreviated risk analysis, cleaning up the groundwater to current MCLs would fall within US EPA's acceptable risk range, and therefore would be protective of human health.

## 10. **Remedial Action Objectives**

**Groundwater** Cleanup standards for indicator chemicals in the groundwater were developed using available drinking water standards. Treatment of the groundwater to state and/or federal maximum contaminant levels (MCLs) will result in an acceptable risk. An additional objective for groundwater is to ensure that the plume is monitored, and that ingestion, absorption through skin, and inhalation of contaminated groundwater is minimized.

A deed restriction is appropriate to prohibit the use of the shallow groundwater underneath the site as a source of drinking water until cleanup standards are achieved.

**Soil** The BPHE prepared by the discharger did not identify soil as an exposure medium unless the soils are excavated. However, a complete exposure pathway may exist if utility workers come in contact with the contaminated material which is present at depths between 9 and 16 feet bgs. Although no significant public health risk appears to exist, to be conservative the remedial action objective would be to ensure that absorption or inhalation of possible contaminated soils by workers is prevented.

In addition, as long as high concentrations of VOCs are present in saturated soils, they provide a continued source for leaching of contaminants into the surrounding groundwater, and therefore provide a continued threat to water quality. Although the source areas are currently beneath the water table, the remedial action objective would be to remove the source(s), if feasible, when they become accessible.

11. **Screening of Remedial Technologies** The discharger developed and evaluated a list of possible alternatives for remediating the groundwater emanating from the PMI/Bourns site. The screening of technologies was based on their applicability to site characteristics, on the properties of the chemicals, and on anticipated performance. The remaining technologies were then further evaluated on the basis of environmental and public health impacts and cost analyses. Final detailed analyses involved implementability, effectiveness, and total project costs.
12. **Remedial Actions** Based on information contained in the discharger's report titled "Remedial Action Plan," dated November 1989, the "Addendum to the Remedial Action Plan," dated December 1992 which updates the original RAP, and its supplement "Additional Remedial Investigations," dated August 1993, this Order provides for a final cleanup plan. An additional requirement, which was not included in the Remedial Action Plan documents but is deemed protective, is institutional control measures on groundwater and soil beneath the site. The final remedial actions are as follows:
  - Increasing the current capture zone by starting up two inactive extraction wells (both onsite) and converting nine monitoring wells to extraction wells (five onsite and four offsite). At the request of the Regional Board, two of the onsite extraction wells, EW-4 and EW-8, were started up in 1993. Additional extraction wells were determined to improve VOC mass removal rates, increase capture and further control the migration of chemicals, decrease overall groundwater discharge rate, and decrease overall cleanup time from that of the current extraction system.
  - Continued extraction and treatment of the A aquifer until cleanup standards in this Order are achieved (Table 1). Cleanup times using the final remedial action alternative are estimated to be 68 years for TCE and 62 years for 1,2-DCE. Cleanup times may be longer if source areas in soils are not remediated. If cleanup standards cannot be achieved, the discharger must demonstrate to the satisfaction of the Board that it is technically impractical from an engineering perspective and that an alternate proposed

level will be protective of human health and the environment. The Order will then need to be modified by the Board to allow a less stringent groundwater cleanup level.

- To verify capture and monitor plume boundaries, installation of three new groundwater monitoring wells, one each in the A1 and A2 zones north of Highway 101 and downgradient of PMI/Bourns wells WA1-40, WA2-40, WA1-58, and one in the A2 zone southeast of the PMI/Bourns well WA2-45.
- The duration and complexity of any groundwater monitoring which will be required after cleanup levels are achieved will be determined at that time.
- An in-situ soil vapor extraction system (ISVE) in VOC-affected soils south of Building 1 will be implemented, if feasible, when the groundwater elevations decrease. Chemically affected soils were identified at depths between 9 and 16 feet bgs, and are currently in the saturated zone because groundwater elevations have risen recently to 10 feet bgs. A pilot test to determine the feasibility of using ISVE will be undertaken when onsite water levels drop to approximately 16 feet bgs for two consecutive quarters.
- Institutional controls consisting of utility worker notification and a deed restriction which will be filed by the discharger prohibiting use of onsite groundwater for drinking water until final cleanup standards are achieved. The institutional constraints will also act as a control with respect to exposure to soils and alert utility workers of potential health and safety concerns.

13. **Cleanup Standards** The groundwater cleanup standards for the site are the more stringent of Environmental Protection Agency MCLs and California Department of Health Services MCLs. At this time it appears that cleanup of groundwater to below the MCLs may be technically impractical due to the difficulties in restoring aquifers with respect to the physical and chemical nature of the contaminants. For this reason, the MCL is acceptable to meet the intent of Resolution 68-16.

The discharger may re-evaluate the risk analysis in the future if MCLs, health criteria, or changes in risk analysis procedures warrant it.

14. **Uncertainty in Achievement of Cleanup Standards** Operation of the groundwater extraction and treatment system may indicate the technical impracticability of reaching health-based groundwater quality standards. If it becomes apparent, during implementation or operation of the system, that contaminant levels have ceased to decline and are remaining constant at levels higher than the cleanup standards, those standards and the remedy may be re-evaluated.

15. **Future Changes to Cleanup Standards** This Order allows periodic evaluation of the remedial standards and consideration of adjustment of the remedial standards for portions or all of the Site if achievement of such standards is no longer practicable.

If new information indicates cleanup standards cannot be attained or can be surpassed, the Board will decide if modified final cleanup actions, other than those completed, shall be implemented at this Site. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the discharger will submit an evaluation of the effects of these changes on cleanup standards as defined in Specification B.3.

The Board recognizes that the discharger has already performed extensive investigative and remedial work and are being ordered hereby to perform additional remedial tasks. It is in the public interest to have the discharger undertake such remedial actions promptly and without prolonged litigation or the expenditure of public funds. The Board recognizes that an important element in encouraging the discharger to invest substantial resources in undertaking reasonable assurances that the remedial actions called for in this Order will be the final remedial actions required to be undertaken by the discharger. On the other hand, the Board also recognizes its responsibility to protect water quality, public health, and the environment and that future developments could indicate that some additional remedial actions may be necessary.

The Board has considered and balanced these important considerations, and has determined that the remedial actions ordered herein represent the Board's best, current judgement of the remedial actions to be required of the discharger. The Board will not require the discharger to undertake additional remedial actions with respect to the matters previously described herein unless: 1) conditions on the Site, previously unknown to the Board, are discovered after adoption of this Order, or 2) new information is received by the Board, in whole or in part after the date of this Order, and these previously unknown conditions or this new information indicates that the remedial actions required in this Order may not be protective of public health and the environment. The Board will also consider technical practicality, cost-effectiveness, State Board Resolution No. 68-16, and other factors evaluated by the Board in issuing this Order in determining whether such additional remedial actions are appropriate and necessary.

16. The dischargers have caused or permitted, and threatens to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

17. Onsite and offsite containment and cleanup measures need to be implemented and/or continued to alleviate the threat to the environment posed by the continued migration of pollutants and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.
18. This action is an order to enforce the laws and regulations administered by the Board. This action is therefore categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
19. The Board has notified the discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
20. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

**IT IS HEREBY ORDERED**, pursuant to Section 13304 of the California Water Code that the discharger shall cleanup and abate the effects described in the above findings as follows:

**A. PROHIBITIONS**

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

**B. SPECIFICATIONS**

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharger shall conduct monitoring activities as determined by the Executive Officer and, should monitoring results show evidence of further plume migration beyond that already identified, or new evidence of soil contamination, additional characterization of the pollutant plume may be required.

3. Final numerical cleanup standards in Table 1 of this Order shall not be exceeded in any well designated in the Self-Monitoring Program established under this Order.
4. All groundwater extraction systems shall be maintained and kept operational until such time as groundwater extraction is curtailed and/or completed in accordance with the provisions of this Order.
5. Pursuant to Section 13304 of the Water Code, the discharger is hereby notified that the Board is entitled to, and may seek reimbursement for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, as required by this Order. The discharger shall reimburse the Board upon receipt of a billing statement for those costs.

**C. PROVISIONS**

1. The discharger shall submit to the Board acceptable monitoring program reports containing results of work performed according to the attached Self-Monitoring Program.
2. The discharger shall comply with the Prohibitions and Specifications above immediately except as modified by the time schedule and tasks listed below.

a. COMPLETION DATE: MAY 16, 1994

**TASK 1: FINAL DESIGN FOR EXPANDED GROUNDWATER TREATMENT SYSTEM AND GROUNDWATER MONITORING WELL INSTALLATION:** Submit a technical report acceptable to the Executive Officer which contains the final design for the expanded groundwater treatment and extraction system for the A zone aquifer based on the preliminary design outlined in the "Addendum to the Remedial Action Plan" dated December 30, 1992. The final design plan shall describe the installation of three additional groundwater monitoring wells, one each in the A1 and A2 zones north of Highway 101 and downgradient of PMI/Bourns wells WA1-40, WA2-40, WA1-58, and one in the A2 zone southeast of the PMI/Bourns well WA2-45. This document shall include, but need not be limited to, final design configuration of wells and associated piping, information on the time required for equipment acquisition, estimated time for system construction, and projected date of implementation. This task should also include completed permit applications to the appropriate agencies and provide status of the negotiations to obtain access to neighboring properties required for the implementation of the expanded groundwater treatment system.

- b. COMPLETION DATE: 120 DAYS AFTER EXECUTIVE OFFICER  
APPROVAL OF REPORT REQUIRED IN TASK  
1

**TASK 2: IMPLEMENTATION OF EXPANDED GROUNDWATER TREATMENT SYSTEM AND INSTALLATION OF GROUNDWATER MONITORING WELLS:** Submit a report acceptable to the Executive Officer which documents the full installation and implementation of the groundwater extraction and treatment system.

- c. COMPLETION DATE: JUNE 16, 1994

**TASK 3: PROPOSED INSTITUTIONAL CONSTRAINTS:** Submit a technical report acceptable to the Executive Officer documenting procedures to be implemented by the discharger, including a deed restriction prepared by Bourns, Inc. and filed with the Santa Clara County Recorder's office prohibiting the use of the site upper aquifer groundwater as a source of drinking water. The report shall also describe the procedures to be used to ensure worker safety and maintain site security. Constraints shall remain in effect until groundwater cleanup standards have been achieved and pollutant levels have stabilized in onsite aquifers.

- d. COMPLETION DATE: 60 DAYS AFTER EXECUTIVE OFFICER  
APPROVAL OF TASK 3

**TASK 4: INSTITUTIONAL CONSTRAINTS IMPLEMENTED:** Submit a technical report acceptable to the Executive Officer documenting that the proposed and approved constraints have been implemented.

- e. COMPLETION DATE: 60 DAYS AFTER REQUEST MADE BY  
EXECUTIVE OFFICER PURSUANT TO FINDING  
12

**TASK 5: WORKPLAN FOR IN-SITU SOIL VAPOR EXTRACTION PILOT TEST PROGRAM:** Submit a report acceptable to the Executive Officer which describes a plan for pilot testing of the vapor extraction system for the vadose zone. This document shall include, but need not be limited to, a description of the system parameters such as well depths, well spacings, and extraction rates, an evaluation of the effect of air permeability of the soils and capillary rise of the groundwater, and how the performance of the system will be evaluated.

- f. COMPLETION DATE: 90 DAYS AFTER EXECUTIVE OFFICER  
APPROVAL OF REPORT REQUIRED TASK 5

**TASK 6: RESULTS OF PILOT TEST PROGRAM FOR IN-SITU SOIL VAPOR EXTRACTION:** Submit a report acceptable to the Executive Officer which describes the results of the pilot test program performed in Task 5. The document shall include justification and a recommendation for the feasibility of proceeding with full implementation of the ISVE system, or detailed technical rationale for not proceeding with implementation of the ISVE system. If ISVE is not recommended, the report must provide a re-evaluation of remedial actions for soil, including protective measures that may limit future migration of chemicals into the groundwater.

If full implementation of the ISVE system is recommended, the report shall contain a preliminary design details including, but not limited to, a determination of system parameters, a map of the well configuration, the estimated zone of influence, the vacuum rate that will be required, necessary auxiliary equipment, and estimated time for system construction and implementation.

- g. COMPLETION DATE: 45 DAYS AFTER EXECUTIVE OFFICER  
APPROVAL OF REPORT REQUIRED TASK 6

**TASK 7: FINAL DESIGN FOR IN-SITU SOIL VAPOR EXTRACTION:** Submit a report acceptable to the Executive Officer which contains final design of the system described in Task 6. The document should include any modifications to the preliminary design, additional specifications, the time required for additional equipment acquisition, estimated time for approval of required permits, and estimated time frame for system start up and final implementation.

- h. COMPLETION DATE: 180 DAYS AFTER EXECUTIVE OFFICER  
APPROVAL OF REPORT REQUIRED IN TASK  
7

**TASK 8: IMPLEMENTATION OF IN-SITU SOIL VAPOR EXTRACTION SYSTEM:** Submit a report acceptable to the Executive Officer which documents full implementation of the in-situ soil vapor extraction system.



- i. COMPLETION DATE: 90 DAYS PRIOR TO PROPOSED CURTAILMENT OF ANY SOIL VAPOR EXTRACTION WELL OR SOIL TREATMENT SYSTEM

**TASK 9: SOIL VAPOR EXTRACTION WELL OR TREATMENT SYSTEM CURTAILMENT:** Submit a technical report acceptable to the Executive Officer which contains a proposal for curtailing pumping from any soil vapor extraction well(s) or piping and the criteria used to justify each curtailment. This report shall describe the results of the work performed, including the locations of borings and sampling interval to determine concentrations of VOCs remaining in soil. The proposal may include the temporary termination of vapor extraction well operation for an extended period of time to study the effects on chemical migration prior to well abandonment.

If the discharger claims that it is not practicable to remediate the source through continued soil vapor extraction in all or any portion of the soil plume area and that significant quantities of chemicals are not being removed through soil vapor extraction, the discharger shall evaluate the reductions in chemical concentrations and the level of soil cleanup that can be practically achieved. The report shall evaluate whether the alternative soil cleanup levels proposed will be protective of human health and the environment.

- j. COMPLETION DATE: 30 DAYS AFTER REMOVAL OF SOIL VAPOR EXTRACTION SYSTEM

**TASK 10: REMOVAL OF SOIL VAPOR EXTRACTION SYSTEM:** Document in a technical report the completion of the necessary tasks identified in Task 8. This report should include the final results of chemical analyses of appropriate samples from the source areas, and copies of well destruction completion notices.

- k. COMPLETION DATE: JANUARY 31, 1999

**TASK 11: FIVE-YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION:** Submit a technical report acceptable to the Executive Officer containing the results of any additional investigation; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs; additional recommended measures to achieve final cleanup objectives and standards, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup objectives and standards; and the tasks and time schedule necessary to implement any additional final cleanup measures.

This report shall also describe the reuse of extracted groundwater and evaluate and document the cleanup of contaminated groundwater. If cleanup standards in this Order have not been achieved onsite and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this report shall also contain an evaluation addressing whether it is technically practicable to achieve the cleanup standards, and if so, a proposal for procedures to do so.

- l. COMPLETION DATE: 90 DAYS AFTER REQUEST MADE BY THE EXECUTIVE OFFICER OR AT THE DISCHARGER'S DISCRETION

**TASK 12: EVALUATION OF NEW HEALTH CRITERIA:** Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup standards would be affected, if the concentrations as listed in Specification B.3. change as a result of promulgation of drinking water standards, maximum contaminant levels or action levels or other health based criteria.

- m. COMPLETION DATE: 90 DAYS AFTER REQUEST MADE BY THE EXECUTIVE OFFICER OR AT THE DISCHARGER'S DISCRETION

**TASK 13: EVALUATION OF NEW TECHNICAL INFORMATION:** Submit a technical report acceptable to the Executive Officer which contains an evaluation of new technical and economic information which indicates that cleanup standards or cleanup technologies in some areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or the Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Findings 14 and 15.

- n. CURTAILING GROUNDWATER EXTRACTION

- 1) COMPLETION DATE: 90 DAYS PRIOR TO PROPOSED CURTAILMENT OF ANY OR ALL GROUNDWATER EXTRACTION WELLS(S) OR TREATMENT SYSTEM

**TASK 14: GROUNDWATER WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL:** Submit a technical report acceptable to the Executive Officer containing a proposal for curtailing pumping from any groundwater extraction well and the criteria used to justify such curtailment. Curtailment of groundwater extraction may include, but is

not limited to: final shutdown of the system, a phased approach to shutdown, pulsed pumping, or a significant change in pumping rates. The report shall include the rationale for curtailment or modifying the system. The report for final shutdown of the system shall include data to show that groundwater cleanup standards for all VOCs have been achieved and pollutant levels have stabilized or are stabilizing, and that the potential for pollutant levels rising above cleanup standards is minimal.

If the proposal is a modification to the extraction and treatment system, it is subject to approval by the Executive Officer. If the proposal is substantive curtailment, it is subject to approval by the Board.

If the discharger claims that it is not feasible to achieve cleanup standards, the report shall evaluate the alternate standards that can be achieved, and that the alternative cleanup standards proposed will be protective of human health and the environment.

2) COMPLETION DATE: 60 DAYS AFTER BOARD OR  
EXECUTIVE OFFICER APPROVES  
CURTAILMENT

TASK 15: IMPLEMENTATION OF CURTAILMENT: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 14.

3. The submittal of technical reports evaluating interim and final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment. These evaluations should be consistent with the guidance provided by Subpart F of the NCP (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; CERCLA guidance documents; and shall be consistent with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."
4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer, and the Board may consider revision to this Order for such delays that are beyond the control of the discharger.
5. Technical status reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted quarterly to the Board commencing on July 30, 1994, and covering the previous three months.

Reports shall be submitted on a quarterly basis, or as required by the Executive Officer. These reports shall consist of: (1) a summary of work completed since submittal of the previous report and work projected to be completed by the time of the next report, (2) identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) include, in the event of non-compliance with any Provision or Specification of this Order, written notification which clarifies the reasons for noncompliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of noncompliance on achieving compliance with the remaining requirements of this Order.

These quarterly reports shall also identify any problems with or changes in the groundwater extraction system. Additionally, the reports shall include, but need not be limited to, updated water table and piezometric surface maps and plume maps for all affected water bearing zones, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures. These quarterly reports can be combined with the quarterly Groundwater Self-Monitoring Reports.

6. On an annual basis beginning with the report due January 31, 1995, or as required by the Executive Officer, the status report shall include, but need not be limited to, an evaluation of the progress of cleanup measures. This evaluation should provide a discussion of the flow capture zones of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data for soil and groundwater. The report shall also evaluate the effects of operation of existing extraction wells on groundwater levels, an estimate of the amount of chemicals removed via the extraction systems. The annual reports may be combined with the fourth quarter Self-Monitoring Report.
7. The discharger shall submit technical reports acceptable to the Executive Officer containing revised Quality Assurance Project Plans, Site Safety Plans, and Site Sampling Plans, if requested by the Executive Officer or if deemed necessary. Each revised report shall be submitted within 30 days from the date of staff comments on the draft report.
8. All hydrogeological plans, specification, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist, or professional engineer.
9. All samples shall be analyzed by laboratories certified to perform analysis on hazardous materials or laboratories using approved EPA methods or an

equivalent method acceptable to the Executive Officer. All laboratories shall follow EPA guidance "Documentation Requirements for Data Validation of Non-CLP Laboratory Data for Organic and Inorganic Analyses" dated May 1988 for preparation of data validation packages when required by the Executive Officer.

10. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
11. Copies of all reports pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to:
  - a. Santa Clara Valley Water District

In lieu of the entire report, a cover letter with a copy of the title page attached pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided to:

- b. Santa Clara County Health Department

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to a local repository for public use.

12. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
  - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the terms and conditions of this Order.
  - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
  - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

13. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.
14. If any hazardous substance, as defined in Section 13050(p) of the California Water Code, is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged on any waters of the state, the discharger shall report such discharge to this Regional Board, at (510) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Service at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure (SPCC) Plan in effect, if any estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.
15. The Board will review this Order periodically and may revise the requirements when necessary.
16. Board Order No. 87-9 is hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 16, 1994.



STEVEN R. RITCHIE  
Executive Officer

Attachments:      Table 1   Groundwater Cleanup Standards  
                         Figure 1   Site Map  
                         Figure 2   Source Areas and Extent of Soil Contamination  
                         Groundwater Self-Monitoring Program

TABLE 1

Cleanup Standards<sup>1</sup> for the Chemicals of Concern and Indicator Chemicals in Groundwater

for

**BOURNS, INC.**  
**PRECISION MONOLITHICS, INC.**

**1500 Space Park Drive**  
**Santa Clara**

Compound	Federal MCL <sup>2</sup>	California MCL
1,2-dichlorobenzene	600	NA <sup>3</sup>
1,1-dichloroethane	NA	5
1,1-dichloroethylene	7	6
cis-1,2-dichloroethylene	70	6
trans-1,2-dichloroethylene	100	10
trichloroethylene	5	5
1,1,1-trichloroethane	200	200
1,2,4-trichlorobenzene	70	NA
tetrachloroethylene	5	5
vinyl chloride	2	0.5

---

<sup>1</sup> shaded numbers are Final Cleanup Standards; all concentrations in micrograms per liter

<sup>2</sup> MCL = Maximum Contaminant Level

<sup>3</sup> NA = Not Available

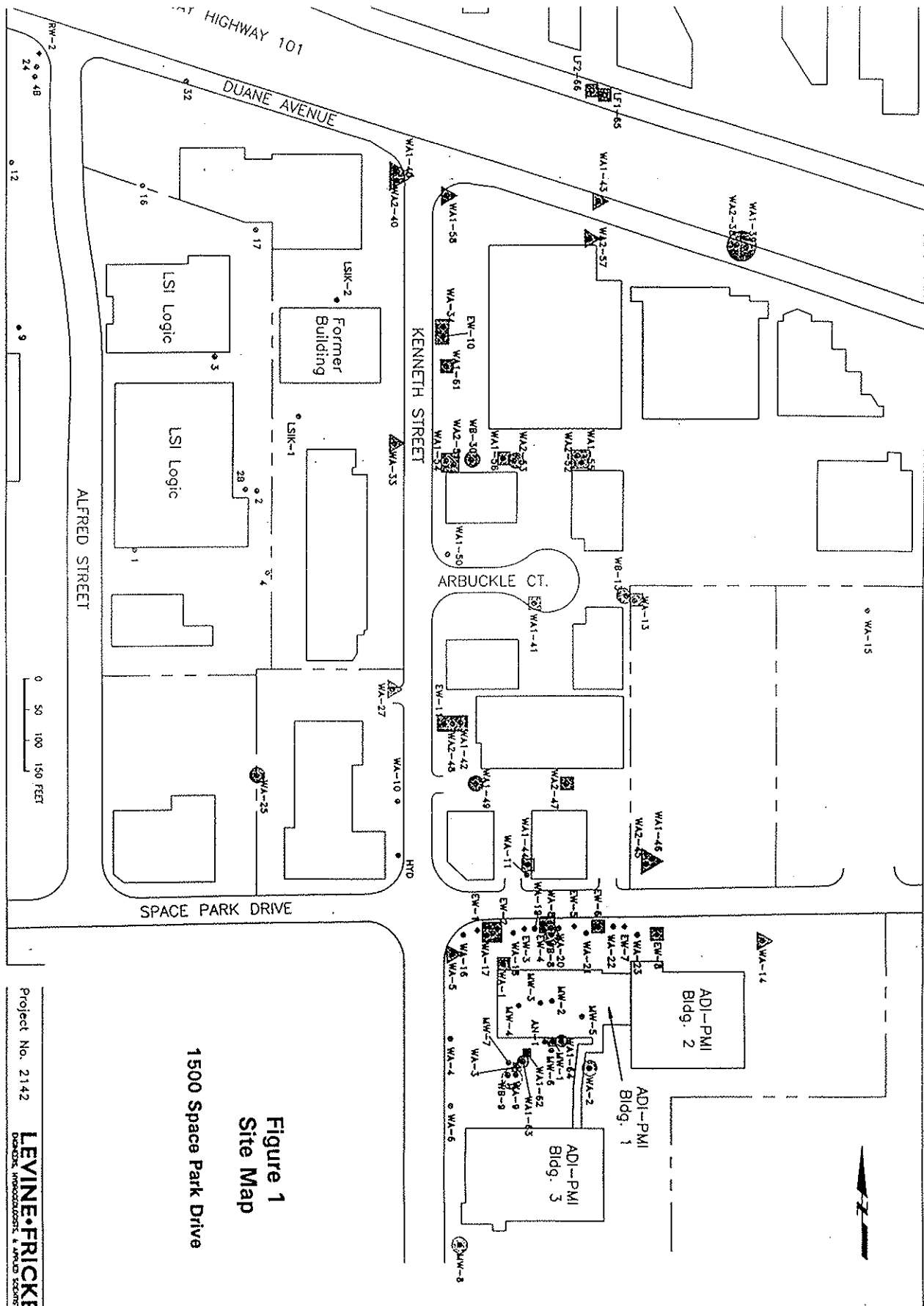


Figure 1  
Site Map

1500 Space Park Drive

Project No. 2142

LEVINE•FRICKE

DRAWN, ANNOTATED, & PRINTED



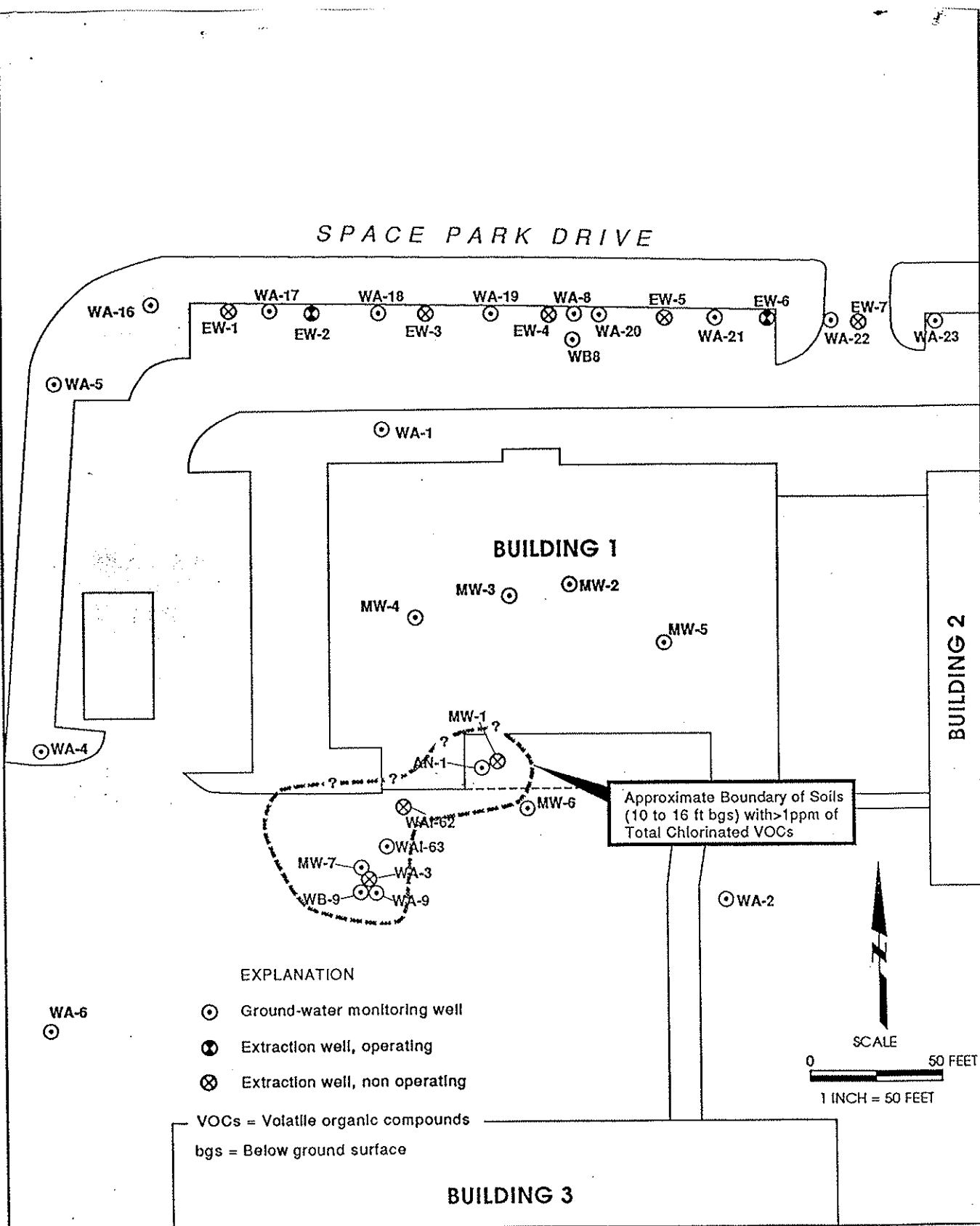


Figure 2 SHALLOW SOILS WITH GREATER THAN 1 PPM OF TOTAL CHLORINATED VOCs

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

GROUNDWATER SELF-MONITORING PROGRAM

FOR

BOURNS, INC.  
PRECISION MONOLITHICS, INC.

1500 SPACE PARK DRIVE  
SANTA CLARA, CA

Santa Clara, Santa Clara County

ORDER NO. 94-026

Adopted on February 16, 1994

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

BOURNS, INC.  
PRECISION MONOLITHICS, INC.  
1500 Space Park Drive  
Santa Clara

GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383 and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and waste water quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the site cleanup requirements due to:

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara

- a. Maintenance work, power failures, or breakdown of waste treatment equipment, or
- b. accidents caused by human error or negligence, or
- c. other causes, such as acts of nature, or
- d. poor operation or inadequate system design,

the discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within 5 working days of the telephone notification. The written report shall include time, date, and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

- 2. The discharger shall file a written technical report to be received at least 30 days prior to advertising for bid (or 60 days prior to construction) on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, cost, and scheduling of all action necessary to preclude such discharge.

3. Self-Monitoring Reports

Written reports shall be filed regularly for each calendar quarter (unless specified otherwise) and filed no later than the thirtieth day of the following quarter. The next quarterly report is due July 30, 1994. The reports shall be comprised of the following:

a. Letter of Transmittal:

A letter from the discharger transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violations. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara

the letter transmitting reports shall be signed by a principal executive officer or a duly authorized representative of that person.

The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

b. Results of Analyses and Observations

- (1) Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results shall also be submitted for any additional analyses performed by the discharger at the specific request of the Board. Quarterly water level data shall also be submitted in the quarterly report.
- (2) The quarterly reports shall include the groundwater extraction rates from each extraction well, water level data from the extraction wells, the results of any aquifer tests conducted during the quarter.
- (3) The quarterly reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.
- (4) The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.
- (5) The discharger shall describe in the quarterly Self-Monitoring Report (SMR) the reasons for significant increases in a pollutant concentration at a well. The description shall include:

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara

- a) the source of the increase,
  - b) how the discharger determined or will investigate the source of the increase, and
  - c) what source removal measures have been completed or will be proposed.
- (6) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.
- (7) A map or maps shall accompany the quarterly report, showing all sampling locations and plume contours to final cleanup levels for principal indicator chemicals in each affected aquifer.
- (8) The discharger shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations and water quality data.
- (9) The annual report shall be combined with the fourth quarter regular report and shall include cumulative data for the current year. The annual report due in January of the following year shall also include minimum, maximum, median, and average water quality data for the year, a summary of water level data, and GC/MS results. The report shall contain both tabular and graphical summaries of historical monitoring data.

d. SMP Revisions:

Additional long-term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara

based on the following criteria and shall be proposed in a quarterly SMR. The changes shall be implemented no earlier than 45 days after the Self Monitoring Report is submitted for review unless approved in writing.

Criteria for SMP revision:

- (1) Discontinued analysis for a routine chemical parameter for a specific well after a two-year period of below detection limit values for that parameter.
- (2) Changes in sampling frequency for a specific well after a two-year period of below detection limit values for all chemical parameters from that well.
- (3) Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).
- (4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.
- (5) Alter sampling frequency and/or the number of wells sampled based on evaluation of collective data base.

D. DESCRIPTION OF SAMPLING STATIONS

All existing and future shallow, intermediate and deep aquifer monitoring and extraction wells as appropriate. See Table I and Figure I (attached) for monitoring and extraction wells installed at the time of the adoption of this SMP.

E. SCHEDULE OF SAMPLING AND ANALYSES

1. The schedule of sampling and analysis shall be that given in Table I (attached).
2. In addition, if a previously undetected compound or peak is detected in a sample from a well, a second sample shall be taken within a week after

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara

the results from the first sample are available. All chromatographic peaks detected in two consecutive samples shall be identified and quantified in the quarterly report.

3. Groundwater elevations shall be obtained on a quarterly basis from wells included in the groundwater self-monitoring program and submitted in the quarterly report with the sampling results.
4. Well depths shall be determined on an annual basis and compared to the depth of the well as constructed. If greater than ninety percent of screen is covered, the discharger shall clear the screen by the next sampling.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with site cleanup requirements established in Regional Board Order No. 94-026.
2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or Regional Board.
3. Was adopted by the Board on February 16, 1994.

2/17/94  
Date

  
Steven R. Ritchie  
Executive Officer

Attachments: Table I - Sampling Schedule  
Figure I - Well Location Map

February 17, 1994



**TABLE I**

**Groundwater Self Monitoring Program for  
BOURNS, INC.  
PRECISION MONOLITHICS, INC.  
1500 Space Park Drive, Santa Clara**

<b><u>Well Number</u></b>	<b><u>Aquifer Zone</u></b>	<b><u>Sampling Frequency<sup>1</sup></u></b>	<b><u>Comments<sup>2</sup></u></b>
WA-1	A1	S <sup>3</sup>	onsite
WA-2	A1	A	onsite
WA-3	A1	S	onsite source area; perched
WA-5	A	Q	onsite
WA-9	A	A	onsite source area
WA-10	A	B	western offsite area
WA-13	A1/A2	S	eastern offsite area
WA-15	A1	A	eastern offsite boundary
WA-17	A1	S	onsite
WA-25	A1/A2	A	western offsite boundary
WA-27	A1/A2	Q	western offsite area
WA-33	A	S	western offsite area
WA-34	A1/A2	S <sup>4</sup>	offsite
WA2-38	A2	A	downgradient edge
WA1-39	A1	A	downgradient edge
WA1-40	A1	Q	downgradient edge
WA2-40	A2	Q	downgradient edge
WA1-41	A1	S	offsite
WA1-42	A1	S	offsite
WA1-43	A1	Q	downgradient edge
WA1-44	A1	S	offsite
WA2-45	A2	Q	eastern offsite area
WA1-46	A1	Q	eastern offsite area
WA2-47	A2	S	offsite
WA2-48	A2	S	offsite
WA1-49	A1	A	offsite
WA1-50	A1	A	offsite

---

<sup>1</sup> Q = quarterly sampling (once every three months)  
S = semi-annual sampling (once every six months)  
A = sampling once per year (to reflect wet seasonal conditions)  
B = biannually (once every other year)  
water levels shall be measured and reported for each well every quarter; pH and specific conductivity shall be measured and reported for each well at each sampling event

<sup>2</sup> Samples shall be analyzed for VOCs using US EPA Method 8010 open scan; samples analyzed annually from WA-3, WA-9, WA1-62, and WA1-63 using US EPA Method 8120

<sup>3</sup> alternate sampling periods with well WA-17

<sup>4</sup> alternate sampling periods with wells WA1-61 and EW-10

Groundwater SMP  
Order No. 94-026  
Bourns, Inc.  
1500 Space Park Drive  
Santa Clara, CA

TABLE I, continued

<u>Well Number</u>	<u>Aquifer Zone</u>	<u>Sampling Frequency</u>	<u>Comments</u>
WA2-51	A2	S	offsite
WA2-52	A2	S	offsite
WA2-53	A2	A	offsite
WA2-57	A2	Q	downgradient edge
WA1-58	A1	Q	downgradient edge
WA1-62	A1	S <sup>5</sup>	onsite source area
WA1-63	A1	A	onsite source area
WA1-64	A1	A	onsite source area
LF1-65	A1	Q <sup>6</sup>	new well; downgradient boundary
LF2-66	A2	Q <sup>7</sup>	new well; downgradient boundary
LF2-67	A2	Q	new well; eastern offsite area
MW-1	A1	S	onsite source area
MW-8	A2	A	onsite upgradient of source area
WB-8	B	A	onsite
WB-9	B	A	onsite source area
WB-13	B	A	eastern offsite area
WB-30	B	A	offsite
EW-2	A1/A2	S	onsite extraction well
EW-4	A1/A2	S	onsite extraction well
EW-6	A1/A2	S	onsite extraction well
EW-8	A1/A2	S	onsite extraction well
EW-10	A1/A2	S	offsite extraction well
EW-11	A1/A2	S	offsite extraction well
WA-8	A1	S <sup>8</sup>	converted to onsite gw ext well
WA1-54	A1	S	converted to offsite gw ext well
WA1-55	A1	S	converted to offsite gw ext well
WA1-56	A1	S	converted to offsite gw ext well
WA1-61	A1	S	converted to offsite gw ext well
LSIK-1	A	Q	western offsite boundary
LSIK-2	A	Q	western offsite boundary

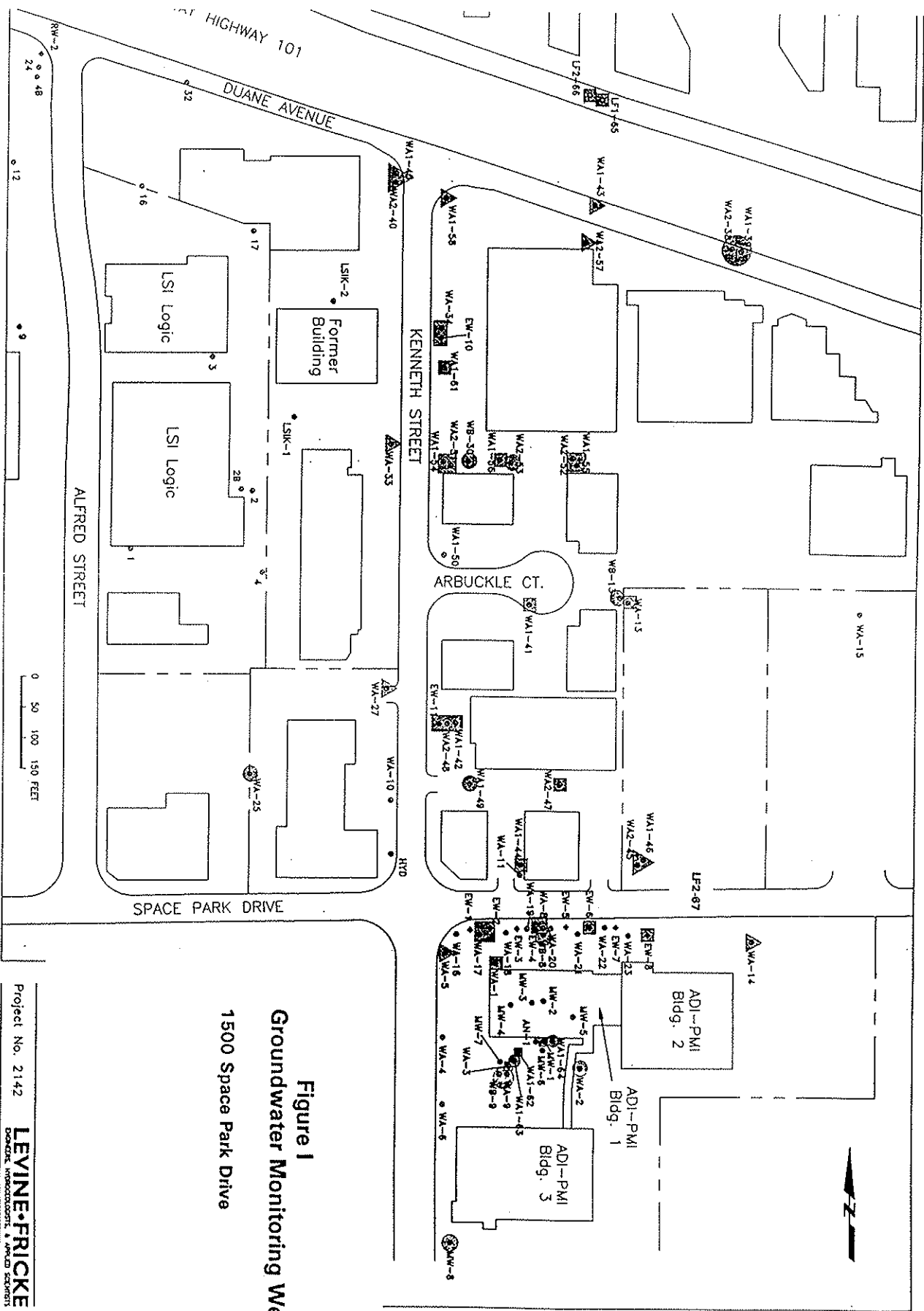
---

<sup>5</sup> alternate sampling periods with well MW-1

<sup>6</sup> samples must be analyzed quarterly for the first year, and may be reduced to semi-annually thereafter, by approval of the Executive Officer

<sup>7</sup> samples must be analyzed quarterly for the first year, and may be reduced to semi-annually thereafter, by approval of the Executive Officer

<sup>8</sup> alternate sampling periods with wells WA1-44 and WA2-47



**Figure 1**  
**Groundwater Monitoring Wells**  
**1500 Space Park Drive**